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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/806,479	07/13/2001	Jorg Hauptmann	P20856	6027

7055 7590 08/31/2005

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EXAMINER	
SWERDLOW, DANIEL	

ART UNIT	PAPER NUMBER
2646	

DATE MAILED: 08/31/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/806,479	HAUPTMANN ET AL.	
	Examiner	Art Unit	
	Daniel Swerdlow	2646	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 January 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *21-40* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *32-40* is/are allowed.

6)☒ Claim(s) *21,22,25,26,28 and 30* is/are rejected.

7)☒ Claim(s) *23,24,27,29 and 31* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

2. **Claims 21, 22, 25 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rasmus et al. (US Patent 6,091,806) in view of Fischer et al (US Patent 6,257,581).**

3. Regarding Claim 21, Rasmus discloses an apparatus (i.e., circuit arrangement) (Figs. 2, 6) for implementing and modifying (i.e., electrically generating) a ring signal (i.e., ringing) impedance in a modem (i.e., telephone terminal) (column 3, lines 48-58) by means of a transistor (Fig. 6; reference 608; column 6, lines 32-46) and a capacitor (Fig. 2, reference 236; column 12, lines 32-44), the ringing impedance adaptable by controlling a variable resistance (Fig. 2, reference 238; column 12, lines 35-38) that comprises a transistor (Fig. 6, reference 608; column 12, lines 48-50), having a sine wave input (i.e., ringing alternating voltage) (column 12, lines 13-15) tapped between Tip and Ring (i.e., first and second input) terminals, wherein a microprocessor (i.e., digital controller) (Fig. 2, reference 102; column 12, lines 32-35) indicates a resistance for the ring detect circuit (i.e., is provided for setting the ringing impedance) when in a present country (i.e., adapting the ringing impedance to the given conditions) by controlling the output of an analog to digital converter (i.e., generating a control voltage) (column 12, lines 58-61) that controls the transistor by varying the gain of an amplifier (Fig. 6, reference 612) that amplifies the ringing voltage (i.e., from the ringing alternating voltage). Therefore, Rasmus anticipates all elements of Claim 21 except the digital controller having a programmable digital filter with a transmission function set by programming filter coefficients. Fischer discloses the

use of a digital filter (Fig. 5, reference 530; column 5, lines 46-49) for impedance emulation and further discloses that the use of digital filters and the programming of the associated coefficients provide convenient control of transfer functions and enhanced operating range (column 6, lines 19-29). Fischer discloses that this property of digital filters is particularly useful in adapting interface circuits for use in different countries, the stated purpose of the invention of Rasmus. As such, it would have been obvious to one skilled in the art at the time of the invention to apply a programmable digital filter with a transmission function set by programming filter coefficients as taught by Fischer to the apparatus taught by Rasmus for the purpose of realizing the aforesaid advantages.

4. Regarding Claim 22, Rasmus further discloses the use of a digital signal processor (column 4, lines 61-63) and Fischer discloses digital filter implementation in a digital signal processor (column 6, lines 28-29) or in dedicated hardware (column 6, lines 26-27). It would have been obvious to one skilled in the art at the time of the invention to implement the digital filter of the combination made obvious by Rasmus and Fischer in the existing digital signal processor because this would be more economical than implementing the digital filter in separate dedicated hardware.

5. Regarding Claim 25, Rasmus further discloses a diode bridge (i.e., rectifier circuit) (Fig. 2, reference 240, 242, 244, 246; column 12, lines 13-17) that modifies a sine wave input to produce a series of positive "bumps" (i.e., rectifies the ringing alternating voltage), a capacitor (Fig. 2, reference 236; column 5, lines 41-44) connected between the TIP (i.e., an input) terminal and the a diode bridge (i.e., rectifier circuit), a transistor (Fig. 6, reference 608; Fig. 2, reference 238; column 5, lines 32-38) with its load path between the outputs of the diode bridge (i.e.,

rectifier circuit), the outputs of the diode bridge (i.e., a first and second voltage which are rectified from the ringing alternating voltage by means of the rectifier circuit) fed to the microprocessor (i.e., controller) via a variable voltage source, an operational amplifier, a divide-by-two circuit and an opto-coupler (Fig. 2, reference 102, 252, 248, 250, 228; column 12, lines 17-31) and the microprocessor (i.e., controller) provides parameter information to a digital-to-analog converter that controls the resistance of the transistor (Fig. 2, reference 102, 230, 238; Fig. 6, reference 608; column 12, lines 32-35, 58-61).

6. Regarding Claim 30, Rasmus further discloses a diode bridge (i.e., rectifier circuit) (Fig. 2, reference 240, 242, 244, 246; column 12, lines 13-17), one output of which (i.e., the junction of the cathodes of 244 and 246) is divided by a voltage divider (Fig. 6, reference 604, 614) to provide an input (i.e., a component voltage) to a variable gain amplifier (Fig. 6, reference 612).

7. **Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rasmus in view of Fischer and further in view of Dittmer (Linear Technology Magazine).**

8. Regarding Claim 26, Rasmus further discloses the transistor as a MOSFET (Fig. 6, reference 608). However, Rasmus is silent as to whether the MOSFET is P-channel or N-channel. Therefore, the combination of Rasmus and Fischer makes obvious all elements except the MOSFET being N-channel. Dittmer discloses that N-channel MOSFETs provide superior performance at lower cost compared to P-channel MOSFETs (page 3, spanning columns 2 and 3). As such, it would have been obvious to one skilled in the art at the time of the invention to select the N-channel MOSFET as taught by Dittmer to the combination made obvious by Rasmus and Fischer for the purpose of realizing the aforesaid advantages.

9. **Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rasmus in view of Fischer and further in view of Noll (Introduction to Telecommunication Electronics).**

10. Regarding Claim 28, Rasmus further discloses the transistor control voltage derived from the difference between the inputs of an operational amplifier (i.e., a first input voltage and a second input voltage) (Fig. 2, reference 248; column 12, lines 17-44). Therefore, the combination of Rasmus and Fischer makes obvious all elements except the output signal being integrated by an integrator circuit upstream of the transistor. Rasmus discloses a digital-to-analog converter that produces the control voltage (i.e., is upstream of the transistor). Noll discloses that a low pass filter (i.e., an analog integrator circuit) is required as an output stage of a digital to analog converter to smooth the output waveform (page 316, 5th paragraph; page 317, middle figure). It would have been obvious to one skilled in the art at the time of the invention to apply the low pass filter taught by Noll to the digital-to-analog converter taught by Rasmus for the purpose of smoothing the output waveform.

Allowable Subject Matter

11. **Claims 23, 24, 27, 29 and 31 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.**

12. Claim 23, 27, 29 and 31have the same limitations as Claim 32 (i.e., a digital power inverter upstream of the digital filter and a digital rectifier downstream of the digital filter) and are allowable matter for the reasons stated below apropos of that claim.

13. Claim 24 has the same limitations as Claim 36 (i.e., a second transistor, a second resistor, a second capacitor and associated limitations) and is allowable matter for the reasons stated below apropos of that claim.

14. **Claims 32 through 40 are allowed.**

15. Regarding Claim 32, as shown above apropos of Claim 21, the combination of Rasmus and Fischer makes obvious all elements except a digital power inverter upstream of the digital filter and a digital rectifier downstream of the digital filter. Rasmus provides ring signal frequency information to the microprocessor by using an operational amplifier to generate pulses at twice the ringing frequency a divider to reduce the pulse frequency to the ring signal frequency and an opto-coupler to protect the microprocessor (Fig. 2, references 248, 250, 228, 102). As such, there is no motivation to utilize a digital power inverter to provide ring signal frequency information. Similarly, the microprocessor disclosed in Rasmus directly controls a digital-to-analog converter to produce a control voltage for the variable resistor transistor circuit (Fig. 2, reference 102, 230, 238). As such, there is no motivation to utilize a digital rectifier to provide an absolute value of a control signal.

16. Claims 33 through 35 are allowable due to dependence from Claim 32.

17. Regarding Claim 36, in addition to the elements stated above apropos of Claim 21, Rasmus further discloses a resistor (Fig. 6, reference 606) a transistor load path (Fig. 6, reference

608) and a capacitor (Fig. 2, reference 236) in series between the tip lead (i.e., the first terminal) and a diode bridge output (i.e., a reference potential) a controller making available a control voltage for driving the transistor (column 12, lines 32-35, 58-61). Therefore, the combination of Rasmus and Fischer makes obvious all elements except a second transistor, a second resistor, a second capacitor and associated limitations. The use of the second transistor, resistor and capacitor configuration allows one set of components to operate on the positive half-cycle of the alternating current ringing signal and the other set to operate on the negative half-cycle. In Rasmus, operation on both half-cycles of the signal is accomplished through the use of a diode bridge. As such, there is no motivation to modify Rasmus by adding a second set of components.

18. Claims 37 through 40 are allowable due to dependence from Claim 36.

Response to Arguments

19. Applicant's arguments filed 5 January 2005 have been fully considered but they are not persuasive.

20. From the first complete paragraph on page 12 through the paragraph spanning pages 13 and 14 of the response filed on 5 January 2005, applicant alleges that the modification of Rasmus in accordance with the teaching of Fischer is so "extensive and complicated" that one skilled in the art would not be motivated to make the combination. Examiner respectfully disagrees. As stated above in the prior art rejection of Claim 21, Rasmus anticipates all elements of Claim 21 except the digital controller having a programmable digital filter with a transmission function set by programming filter coefficients. Instead, Rasmus discloses a digital controller that controls

an impedance characteristic by varying a resistor 238 and capacitor 236 combination (i.e., a filter) across a telephone line (Fig. 2; column 12, lines 42-47). As such, Rasmus is disclosing a filter the characteristics of which are digitally controlled to achieve a desired impedance. Fischer discloses the use of a digital filter (Fig. 5, reference 530; column 5, lines 46-49) for impedance emulation and further discloses that the use of digital filters and the programming of the associated coefficients provide convenient control of transfer functions and enhanced operating range (column 6, lines 19-29). Fischer discloses that this property of digital filters is particularly useful in adapting interface circuits for use in different countries, the stated purpose of the invention of Rasmus. As such, Fischer provides motivation to modify the system disclosed in Rasmus by replacement of a digitally controlled analog filter with a digital filter, which is well within the capability of one skilled in the art.

21. Applicant's remaining arguments are directed to dependence of claims from Claim 21 and are unpersuasive for reasons stated above.

Conclusion

22. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel Swerdlow whose telephone number is 571-272-7531. The examiner can normally be reached on Monday through Friday between 7:30 AM and 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sinh H. Tran can be reached on 571-272-7564. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Daniel Swerdlow
Examiner
Art Unit 2646

ds
18 August 2005